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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/578,149

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Djuro Slivar

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EXAMINER

BARROW, AMANDA J

ART UNIT

PAPER NUMBER

1729

MAIL DATE

DELIVERY MODE

07/07/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/578,149	SLIVAR, DJURO	
	Examiner	Art Unit	
	AMANDA BARROW	1729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-5 and 7-18 is/are pending in the application.
- 4a) Of the above claim(s) 7-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-5, 17 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Application

1. The Applicant's amendment filed on 6/14/2011 was received. Claim 17 was amended. No claims were cancelled.

2. The texts of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on 10/29/2009.

Claim Rejections - 35 USC § 102/ 35 USC § 103

3. Independent claim 17 has been amended to remove the product-by-process language; thus, the rejection under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (US 6,270,833) on claims 17 and 18 is withdrawn.

The rejection under 35 U.S.C. 102(b) as being anticipated by Yamashita et al. (US 6,270,833) on claims 17 and 18 is maintained.

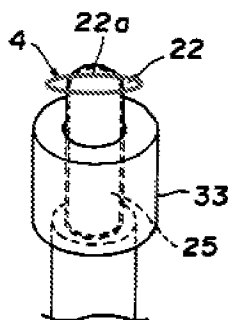
Regarding claim 17, Yamashita discloses a separator for an alkaline cell and a method of producing same. Yamashita teaches that the separator base paper 21 is rotated in the horizontal direction by a mandrel to form a cylindrical formation of three windings and then the cylindrical formation was subject to a heat bonding at side and bottom portions to form a cylindrical structure with a closed end (column 4, line 66 through column 5, line 5). The base paper 21 is made of vinylon fiber/rayon fiber/vinylon binder (i.e., a "non-woven" sheet material"). As illustrated in Figures 5C and 5D, the bottom part of the cylindrical separator is formed by an integral extension of cylindrical body 22. Yamashita teaches that a semi-spherical bottom

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portion 22a is formed into the cylindrical body 22 thus resulting in circumferential sections of the cylindrical body bottom part which are uniformly and evenly bent as claimed.

To make the position of the Examiner clear, Figure 5D of Yamashita is reproduced below with a circle surrounding a circumferential section of separator 22 which is uniformly and evenly bent:

FIG. 5D



Because Yamashita's bottom part is a semi-sphere (i.e., the bottom-most part is a half sphere as illustrated), all points around a circumferential section will be uniformly and evenly bent as all points around a circumferential section will have the same degree of curvature. Furthermore, the final separator products as shown in Figures 5D illustrate its wrinkle-free continuous inner and outer surfaces. The dotted line of cylindrical separator 22 in Figure 5D indicates the substantial uniform thickness of the separator.

Regarding claim 18, Yamashita illustrates that the bottom part 22a of cylindrical separator 22 has a slightly outward curved shape (see Figure 5D). Yamashita also refers to the bottom portion 22a as the "semi-spherical bottom portion" (column 7, line 65 through column 8, line 2).

Claim Rejections - 35 USC § 103

4. The rejection under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (US 6,270,833) as applied to claims 17 and 18 above, and further in view of Haruhisa et al. (JP 07245091) and Gozdz et al. (US 2002/0110728) on claims 2 and 4 are maintained.

Regarding claim 2, Yamashita teaches that the base paper 21 is made of vinylon fiber/rayon fiber/vinylon binder (i.e., "a non-woven sheet") (column 4, line 66 through column 5, line 5). Yamashita does not disclose whether or not the separator base paper 21 consists of a plurality of sheets; however, Haruhisa discloses analogous art of providing a cylindrical separator out of non-woven sheet material for use as an insulating element in a battery (abstract). Haruhisa discloses that the separator material sheet 31 of nonwoven fabric consists of multiple layers which are then wound to form a cylindrical separator 32 (abstract and paragraph 8). There is no use of binder in the winding process, and thus, the sheets are wound together without any binder as recited in the claim (see paragraph 8).

Therefore, it would have been obvious to a person of ordinary skill to modify the non-woven sheet material used as separator base material 21 of Yamashita to include a layered structure of multiple non-woven cloths because Haruhisa discloses analogous art in which the separator base material 31 that forms the cylindrical separator consists of a layered sheet structure and that the separator made provides stable production and a quality product (paragraph 15) as well as prevention of separator breakage (paragraph 12).

Furthermore, it is advantageous to configure a plurality of separator sheets wound together without the use of binder as taught by Haruhisa because it is well known in the art, as taught by Gozdz, that binder clogs the pores of separator sheets leading to an alteration in the

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microporous structure and a general decline of electrolyte flow through the separator (paragraph 12). Furthermore, the application of binder also unproductively increases the cell mass, thus lowering its effective energy storage capacity (paragraph 12).

Therefore, it would have been obvious to a person of ordinary skill to modify the non-woven sheet material used as separator base material 21 of Yamashita to include a layered structure of multiple non-woven cloths that uses no binder because Haruhisa discloses this configuration and Gozdz teaches that the application of binder clogs pores leading to a local filling of the micropores of the separator and a decline in flow through the separator as well as an increase in the cell mass leading to a lowered effective energy storage capacity (paragraph 12).

Regarding claim 4, Yamashita teaches that the base paper 21 is made of vinylon fiber/rayon fiber/vinylon binder (i.e., "a non-woven sheet") (column 4, line 66 through column 5, line 5). Yamashita does not disclose whether or not the turns are affixed to each other with binder; however Haruhisa discloses analogous art of providing a cylindrical separator out of non-woven sheet material for use as an insulating element in a battery (abstract). Haruhisa discloses that the separator material sheet 31 of nonwoven fabric consists of multiple layers which are then wound to form a cylindrical separator 32 (abstract and paragraph 8). There is no use of binder in the winding process, and thus, the sheets are wound together without any binder (see paragraph 8).

Therefore, it would have been obvious to a person of ordinary skill to modify the non-woven sheet material used as separator base material 21 of Yamashita to include a layered structure of multiple non-woven cloths that does not affix the sheets with any binder material because Haruhisa discloses analogous art in which the separator base material 31 that forms the

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cylindrical separator consists of a layered sheet structure which is wound together without the use of binder and teaches that the separator made provides stable production and a quality product (paragraph 15) as well as prevention of separator breakage (paragraph 12).

Furthermore, it is advantageous to configure a plurality of separator sheets wound together without the use of binder as taught by Haruhisa because it is well known in the art, as taught by Gozdz, that binder clogs the pores of separator sheets leading to an alteration in the microporous structure and a general decline of electrolyte flow through the separator (paragraph 12). Furthermore, the application of binder also unproductively increases the cell mass, thus lowering its effective energy storage capacity (paragraph 12).

Therefore, it would have been obvious to a person of ordinary skill in the art to modify the winding of the separator without the use of binder because Haruhisa discloses this configuration and Gozdz teaches that the application of binder clogs pores leading to a local filling of the micropores of the separator and a decline in flow through the separator as well as an increase in the cell mass leading to a lowered effective energy storage capacity (paragraph 12).

5. The rejection under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (US 6,270,833) in view of Haruhisa et al. (JP 07245091) as applied to claims 2 and 4 above, and further in view of Devitt (US 3,897,266) on claim 3 is maintained.

Regarding claim 3, modified Yamashita teaches that the separator material sheet 31 is made of layers of either woven or nonwoven fabric (i.e., two semi-permeable membranes), but does not disclose the addition of cellophane to the separator material sheet 31. Devitt discloses analogous art of an alkaline battery cell which contains a separator for preventing the metallic

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conduction between opposite polarity electrode plates (column 4, lines 43-45). Devitt discloses that conventional non-woven porous separators generally lack uniformity, are overly porous and readily allow and promote growth of zinc dendrites through the porous interstices (column 5, lines 31-40). Devitt teaches that preferred materials are cellulosic materials as they resist attack by electrolyte and are resistant to oxidation and have suitable ranges for air permeability and electrolyte absorption; however, cellophane lacks mechanical strength to properly conform to the contour of the zinc plate (column 5, lines 1-16 and lines 29-31). Thus, Devitt discloses that the separator used in the invention is a cellophane membrane next to the non-woven porous fabric separator such as Pellon and that this layering of the cellophane and non-woven fabric membranes attenuates dendritic growth and prevents metallic conduction between the positive and negative plates (column 5, lines 50-55). Devitt does not disclose the use of any binder between the sheets.

Therefore, it would have been obvious to a person of ordinary skill in the art to modify the separator layer of modified Yamashita to include a layer of cellophane in addition to the multi-layered separator sheet because Devitt teaches that this attenuates dendritic growth and prevents metallic conduction between positive and negative plates (Devitt, column 5, lines 50-55).

6. The rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (US 6,270,833) as applied to claims 17 and 18 above, and further in view of Tomantschger et al. (US 5,300, 371) on claim 5 is maintained.

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Regarding claim 5, Yamashita does not disclose a thermoplastic sealant arranged at the central zone on the outside of said bottom part 22a; however, Tomantschger discloses an alkaline cell in which a thermoplastic sealant may be applied to the bottom of the separator to prevent electrical contact between the negative electrode 14 and the cell container or can 12(column 13, lines 1-9).

Therefore, it would have been obvious to a person of ordinary skill in the art to modify the cell of Yamashita to include a thermoplastic sealant at the central zone on the outside of the bottom part as taught by Tomantschger in order prevent electrical contact between the negative electrode and the cell container (Tomantschger, column 12, lines 1-9).

Response to Arguments

7. Applicant's arguments filed 4/21/2011 have been fully considered but they are not persuasive.

Applicant's remaining principal arguments are

(a) Claim 17 recites that the bottom part of the cylindrical body has a uniform and even bend along an entire circumferential section, i.e., the bend is symmetrical with regard to the longitudinal axis of the cylindrical separator body. Moreover, the respective inner and outer surfaces of the curved bottom part are continuous and wrinkle-free and the bottom part has a uniform thickness. These latter characteristics of the separator directly result from the method according to the invention wherein the bending and shaping takes place while the cylinder is rotating and are not taught or made obvious by the disclosure of Yamashita. The Examiner has taken the position that the bottom part 22a of the cylindrical separator is shaped to be semi-

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cylindrical and is shown in Figure 5D as having wrinkle-free inner and outer surfaces and being of a uniform thickness. It is again pointed out that Figure 5D is a schematic illustration only and shows the separator after the steps shown in Figures 6A-6C and 7 have been carried out. There is no discussion of the dashed line in Figure 5D and there is no reason to assume that it represents a uniform thickness.

(b) The method of Yamashita will inevitably cause wrinkles and results in a non-even thickness as there are parts of the bottom where the wall thickness counts twice. In addition, claim 17 specifically recites how the bottom part is formed which is clearly different from Yamashita's method.

In response to Applicant's arguments, please consider the following comments.

(a) Reviewing the specification of Yamashita, Yamashita outlines the method and final product in which the method comprises "...heat treating an end of the cylindrical body to close the end to thereby form a closed end" (column 2, lines 54-55) wherein, "...when an end of the cylindrical body 22 is closed by a heat bonding method, a rod-like jig 27 may be obliquely pressed against the end of cylindrical body 22 to depress on side portion 22c of the end of the cylindrical body 22 and bend to the fold the portion 22c at right angles and, at this moment, a heat curl 29 is pressed against the end of cylindrical body 22 to proceed a heat bonding" (column 4, lines 12-19). When this heat bonding step takes places it forms "***a semi-spherical bottom portion 22a*** at the upper end of the cylindrical body 22" (column 7, lines 65 through column 8, line 2). This final product is shown in Figure 5D in which the bottom part 22a, being an integral extension of cylindrical body 22 (see Figure 5C), has a uniform and even bend along an entire

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circumferential section of cylindrical body 22 and is fused by a heat bonding step as outlined above. As would be apparent from the method of making separator 22 in which the end of cylindrical body 22 is heat-bonded together, bottom part 22a has continuous inner and outer surfaces and a substantially uniform thickness as claimed. This is also indicated in the drawing shown in Figure 5D and as pointed out earlier in prosecution, "Drawings and pictures can anticipate claims if they clearly show the structure which is claimed. *In re Mraz*, 455 F.2d 1069, 173 USPQ 25 (CCPA 1972). However, the picture must show all the claimed structural features and how they are put together. *Jockmus v. Leviton*, 28 F.2d 812 (2d Cir. 1928). **When the reference is a utility patent, it does not matter that the feature shown is unintended or unexplained in the specification** (See MPEP § 2125 and MPEP § 2121.04). Therefore, as indicated by MPEP sections 2125 and 2121.04, the drawings of Yamashita can also be used to anticipate the present claims in addition to that which is discussed in the specification, namely, a method of making which provides continuous inner and outer surfaces and a substantially uniform thickness as claimed (see column 2, lines 54-55; column 4, lines 12-19; column 7, lines 65 through column 8, line 2; and Figure 5D).

(b) The Applicant argues that the bottom will be uneven as portions of the wall thickness count twice in Yamashita. The present claims recite, "a substantially uniform thickness." Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). As illustrated in Applicants' disclosure, the bottom portion of the Applicant's separator which has "a substantial uniform thickness" has portions which "count twice" as they overlap (see Figures 5-10; specifically Figure 7). Thus, the Examiner's interpretation of the bottom part of the

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separator having a "substantial uniform thickness" is sound. Furthermore, because the claim recites, "substantially," the bottom separator surface does not have to be exactly uniform leaving room for interpretation of what is considered to be a "uniform thickness."

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **AMANDA BARROW** whose telephone number is (571)270-7867. The examiner can normally be reached on 7:30am-5pm EST. Monday-Friday, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ula Ruddock can be reached on 571-272-1481. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AMANDA BARROW/
Examiner, Art Unit 1729

/ULA C. RUDDOCK/
Supervisory Patent Examiner, Art Unit 1729